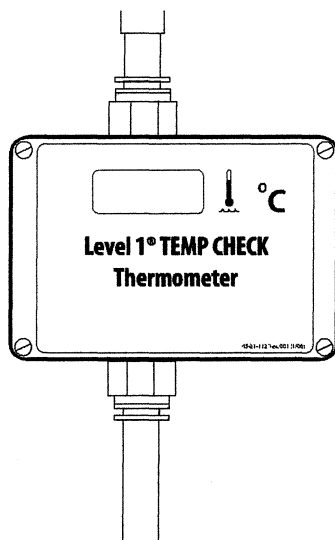


### Level 1<sup>®</sup> TEMP CHECK Thermometer

**REF** DSTA-40



**For use with Level 1<sup>®</sup> H-1200, H-1000, H-1100  
Fast Flow Fluid Warmers**

Manufacturer:  
**Smiths Medical ASD, Inc.**  
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Colonial Way  
Watford, Herts, WD24 4LG, UK  
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**Level 1® DSTA-40 TEMP CHECK Thermometer Operator's Manual**  
Part Number: 4533045 Rev. 002 (2006-03)

This revision supercedes all previous revisions.

Every effort has been made to ensure that the information in this manual is accurate and details provided are correct at the time of printing. The company, however, reserves the right to improve the equipment shown. Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Smiths Medical ASD, Inc. ("Smiths Medical") assumes no responsibility with regard to the performance or use of these products.

Level 1, and Smiths design mark are trademarks of the Smiths Medical family of companies. The symbol ® indicates the trademark is registered in the U.S. Patent and Trademark office and certain other countries.

All other names and marks mentioned are the trade names, trademarks, or service marks of the respective owners.

For further information, please call the local Smiths Medical representative or Smiths Medical direct at 1-800-258-5361 or +1-781-878-8011.

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## WARNINGS

A revision date for these instructions is included for the user's information. In the event two years elapse between this date and product use, the user should contact Smiths Medical or its authorized agent to see if additional product information is available.

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## About This Manual

These instructions contain important information for safe use of the product. Read the entire operator's manual, including Warnings and Cautions, before using the Level 1® DSTA-40 TEMP CHECK Thermometer. Failure to properly follow warnings, cautions, and instructions could result in death or serious injury to the patient.

## Intended Use

The Level 1® DSTA-40 TEMP CHECK is designed for Biomedical Engineers and Technicians to verify the recirculating solution temperature of the Level 1® H-1200 Fast Flow Fluid Warmer. Verifying the temperature setting of the Level 1® H-1200 Fast Flow Fluid Warmer is recommended once every twelve months as part of the routine maintenance schedule. Your organization may require more frequent verification.

**Note:** The Level 1® DSTA-40 TEMP Check can be used with the H-1200, H-1000, and H-1100. The H-1200 only will be referenced in this manual.

## Conventions Used in this Manual

- The DSTA-40 TEMP CHECK will be referred to as the TEMP CHECK.
- The Level 1® H-1200 Fast Flow Fluid Warmer will be referred to as the H-1200 Fluid Warmer.

Convention	Description
<b>Note</b>	A Note statement indicates information or procedures that if not followed correctly can cause improper results.
<b>CAUTION</b>	A Caution statement indicates information or procedures that if not followed correctly can cause improper results and damage to the equipment.
<b>WARNING</b>	A Warning statement indicates information or procedures that if not followed correctly can cause improper results, damage to the equipment, injury to personnel, or patient death.

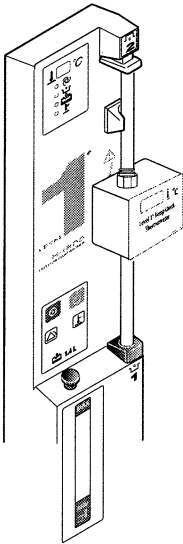
## Description

The TEMP CHECK is a thermometer used to verify the H-1200 Fluid Warmer's recirculating solution operating temperature. The TEMP CHECK uses thermistor technology to sense the temperature of the H-1200 Fluid Warmer's recirculating solution operating temperature. The recirculating solution temperature is displayed through a liquid crystal display (LCD) using analog technologies. The TEMP CHECK is powered by the H-1200 Fluid Warmer auxiliary outlet. No batteries are required.

## Principles Of Operation

The figure shows the H-1200 Fluid Warmer with the TEMP CHECK in place.

The recirculating solution is pumped from the reservoir through the heater. The recirculating solution then passes across the H-1200 Fluid Warmer bottom thermistor, assembled in the bottom socket, and then through the TEMP CHECK. As the temperature of the reservoir is typically 0.5°C to 2.0°C lower than the temperature from the heater, verifying the operating temperature of the recirculating solution by temperature readings in the reservoir is inaccurate. The TEMP CHECK senses the highest temperature of the recirculating solution.



## Safety

The TEMP CHECK is an NIST-traceable temperature standard thermometer.

### CAUTIONS

- There are no user-serviceable parts in the TEMP CHECK. It is recommended that the TEMP CHECK be returned to Smiths Medical or its authorized agent annually for calibration. Please refer to the Service Section of this manual.
- The TEMP CHECK is designed as a temperature verification tool. It is not intended for patient use.

## Unpacking

The following is a checklist of all of the items that you should receive with the TEMP CHECK:

ITEM	QUANTITY	ITEM	QUANTITY
Black carrying case	1	Gas Vent Tube	1
TEMP CHECK	1	Operator's Manual	1
Clear plastic tube	1	Certificate of Calibration	1
Clear plastic tube with white sleeve	1	O-Ring kit	1

# Instructions For Use

## Temperature Verification And Calibration

### Step 1: Required Tools

- TEMP CHECK
- Clear plastic tube
- Clear plastic tube with white sleeve
- Gas Vent/Filter Assembly
- #3 Phillips head screwdriver
- 3.175 mm (1/8 inch) flat head screwdriver

### Step 2: Check the Ambient Temperature

- 1 Check the ambient room temperature.
- 2 Adjust the ambient room temperature to  $22^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .

Note: The procedures in this manual are written to be accurate and will only be valid when calibration is done in an ambient temperature of  $22^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .

Note: TEMP CHECK Thermometers are designed for measuring recirculating solution only and are NOT intended for measuring ambient temperatures.

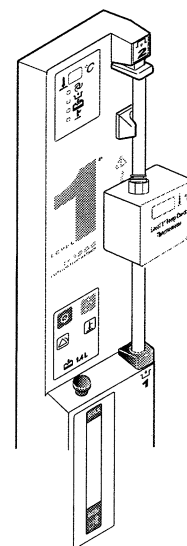
Note: The TEMP CHECK and the H-1200 Fluid Warmer may not display the same temperature during the warm up period. This is normal.

### Step 3: Assemble the TEMP CHECK Thermometer

- 1 Insert the clear plastic tube into the bottom fitting on the TEMP CHECK. Press firmly in place until the clear plastic tube meets the stop.
- 2 Insert the longer end of the plastic tube with white sleeve into the top of the TEMP CHECK. Press firmly in place until the clear plastic meets the stop.

## Step 4: Install TEMP CHECK into H-1200 Fluid Warmer

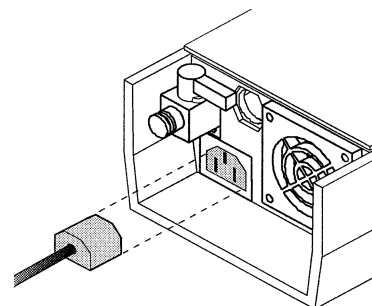
- 1 Place the bottom tube of the TEMP CHECK into socket #1.
- 2 Press the top tube into the middle interlock and close socket #2.



- 3 Plug the TEMP CHECK power cord into the auxiliary outlet on the bottom of the H-1200 Fluid Warmer.
- 4 Insert the Gas Vent/Filter Assembly into socket #3.

## Step 5: Verify the Recirculating Solution Temperature

- 1 Turn ON the H-1200 Fluid Warmer.
- 2 Allow the H-1200 Fluid Warmer and the TEMP CHECK recirculating solution temperature displays to stabilize.
- 3 If the TEMP CHECK display indicates a temperature between 41 °C and 42 °C, skip to Step 7: Compare TEMP CHECK Display to H-1200 Fluid Warmer Display.
- 4 If the TEMP CHECK display does not indicate a temperature between 41 °C and 42 °C, the recirculating solution temperature must be adjusted. Go to Step 6: Calibrate the Recirculating Solution Temperature.





## Step 6: Calibrate the Recirculating Solution Temperature

### WARNINGS

- Exercise extreme caution when rear panel is removed and line voltage is exposed.

### CAUTIONS

- Avoid contact with any internal components not specified in this procedure.
- Support the H-1200 Fluid Warmer while the back is removed.

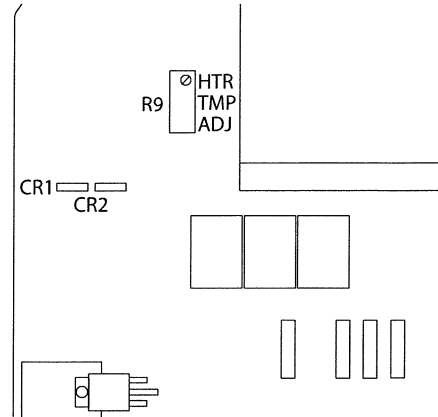
- 1 Turn OFF the H-1200 Fluid Warmer.
- 2 Unplug from the power outlet.
- 3 While depressing the red air supply port on the back cover, pull out the black pressure tube.
- 4 Remove the H-1200 Fluid Warmer from the IV pole and secure it in an upright position.
- 5 Using a #3 Phillips head screwdriver, remove all 18 screws from the back cover.
- 6 Remove the cover. The ground wire is still attached.
- 7 Disconnect rear panel ground wire and completely remove rear panel.
- 8 Plug H-1200 Fluid Warmer into power outlet.
- 9 Turn ON the H-1200 Fluid Warmer.
- 10 Allow the H-1200 Fluid Warmer and the TEMP CHECK recirculating solution temperature displays to stabilize.

**11** Locate the TEMP (R9) potentiometer near the bottom of the printed circuit board.

**12** Using a 3.175 mm (1/8 inch) flat head screwdriver, adjust the TEMP (R9) potentiometer accordingly until the TEMP CHECK indicates a temperature of  $41.7^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$ .

- To increase the water temperature, turn clockwise.
- To decrease the water temperature, turn counterclockwise.

**Note:** Never adjust the TEMP (R9) potentiometer more than 1 full turn at a time. Allow a minimum of 5 minutes between adjustments.



## Step 7: Compare TEMP CHECK Display to H-1200 Fluid Warmer Display

- 1** If the H-1200 Fluid Warmer display indicates  $41^{\circ}\text{C}$  or  $42^{\circ}\text{C}$ , skip to Step 9: Verify the Over Temperature Alarm Activation Point.
- 2** If the H-1200 Fluid Warmer display does not indicate  $41^{\circ}\text{C}$  or  $42^{\circ}\text{C}$ , go to Step 8: Adjusting the H-1200 Fluid Warmer Display.

## Step 8: Adjusting the H-1200 Fluid Warmer Display

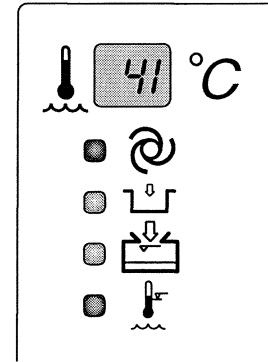
### WARNINGS

- Exercise extreme caution when rear panel is removed and line voltage is exposed.

### CAUTIONS

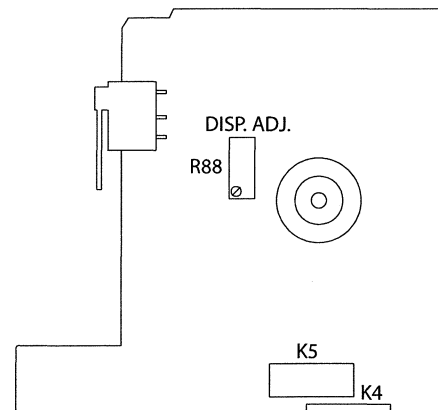
- Avoid contact with any internal components not specified in this procedure.
- Support the H-1200 Fluid Warmer while the back is removed.

- 1 Partially peel back the top of the label from the H-1200 Fluid Warmer display window.



- 2 Locate the DISPLAY (R88) potentiometer at the left upper corner of the printed circuit board.
- 3 Using a 3.175 mm (1/8 inch) flat head screwdriver, adjust the DISPLAY (R88) potentiometer accordingly until the H-1200 Fluid Warmer display equals the TEMP CHECK display.

- To increase the H-1200 Fluid Warmer display reading, turn clockwise.
- To decrease the H-1200 Fluid Warmer display reading, turn counterclockwise.

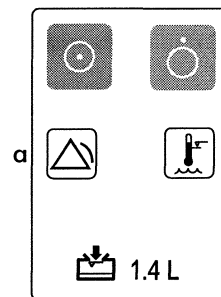


## Step 9: Verify the Over Temperature Alarm Activation Point

Note: Allow the H-1200 Fluid Warmer display to stabilize.

Note: The Over Temperature Test button verifies the Over Temperature circuit only. It does not indicate actual recirculating solution temperature. The H-1200 Fluid Warmer Over Temperature Alarm will activate if the recirculating solution reaches 43.9°C.

- 1 Press and hold the Over Temperature Test button (a) on the front display panel of the H-1200 Fluid Warmer.
- 2 The H-1200 Fluid Warmer Over Temperature Alarm should activate.
- 3 The H-1200 Fluid Warmer display should indicate a temperature between 45.0°C and 45.4°C while the Over Temperature Test button is depressed.
- 4 Check that the green Operating LED goes out, the red Over Temperature LED lights, and the audible alarm sounds. The water will stop circulating.



**5** If the Over Temperature Alarm activates:

- Turn OFF the H-1200 Fluid Warmer
- Unplug from the power outlet
- Remove the TEMP CHECK Thermometer
- Verification is complete.

**6** If the Over Temperature Alarm does not activate, go to Step 10: Calibrate Over Temperature Alarm Activation Point.**Step 10: Calibrate Over Temperature Alarm Activation Point****WARNINGS**

- Exercise extreme caution when rear panel is removed and line voltage is exposed.

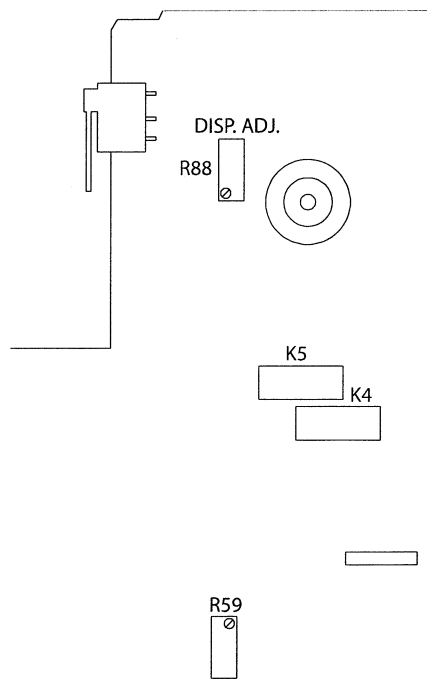
**CAUTIONS**

- Avoid contact with any internal components not specified in this procedure.
- Support the H-1200 Fluid Warmer while the back is removed.

- 1** Locate DISPLAY (R88) potentiometer near the top right corner of the printed circuit board.
- 2** Using an 3.175 mm (1/8 inch) flat head screwdriver, adjust the DISPLAY (R88) potentiometer clockwise until the H-1200 Fluid Warmer display reads 43.9 °C. Wait for 3 seconds.
- 3** If the Over Temperature Alarm activates before the H-1200 Fluid Warmer display reaches 43.9° C, turn the DISPLAY (R88) potentiometer 1 full turn counterclockwise.

Note: The alarm will continue until the H-1200 Fluid Warmer alarm is cleared.

- 4** To clear the alarm, turn OFF the H-1200 Fluid Warmer, and then turn it back ON.
- 5** Turn the OT (R59) potentiometer ¼ turn counterclockwise.
- 6** Turn the DISPLAY (R88) potentiometer clockwise until the Over Temperature Alarm activates at 43.9°C.



- 7 Repeat step 4, step 5, and step 6 until the Over Temperature Alarm activates at 43.9°C.
- 8 Once the Over Temperature activation point is set, adjust the H-1200 Fluid Warmer DISPLAY to equal the TEMP CHECK display.
- 9 Press the H-1200 Fluid Warmer display label back into position.
- 10 Verification is complete.

## Step 11: Replace cover

- 1 Turn OFF the H-1200 Fluid Warmer.
- 2 Unplug from the power outlet.
- 3 Remove the TEMP CHECK.
- 4 Attach the rear panel ground wire.
- 5 Align the screw holes and red air supply port with the holes on the back cover.
- 6 Using a #3 Phillips head screwdriver, replace all 18 screws to secure the back cover.
- 7 Secure the H-1200 Fluid Warmer to the IV pole.
- 8 Insert the black pressure tube firmly into the air supply port.

## Limited Warranty

Smiths Medical ASD, Inc. (the "Manufacturer") warrants to the Original Purchaser that the TEMP CHECK Thermometer (TEMP CHECK), not including accessories, shall be free from defects in materials and workmanship under normal use, if used in accordance with this Operator's Manual, for a period of one year from the actual date of sale to the Original Purchaser. THERE ARE NO OTHER WARRANTIES.

This warranty does not cover normal wear and tear and maintenance items, and specifically excludes hoses, warming blankets, roll stands or any other accessory items or equipment used with the TEMP CHECK.

Subject to the conditions of and upon compliance with this Limited Warranty, the Manufacturer will repair or replace at its option without charge (except for a minimal charge for postage and handling) any TEMP CHECK (not including accessories) which is defective if a claim is made during such one-year period.

The following conditions, procedures, and limitations apply to the Manufacturer's obligation under this warranty:

- A. **Parties Covered by this Warranty:** This warranty extends only to the Original Purchaser of the TEMP CHECK. This warranty does not extend to subsequent purchasers. The Original Purchaser may be

medical personnel, a hospital, or institution which purchases the TEMP CHECK for treatment of patients. The Original Purchaser should retain the invoice or sales receipt as proof as to the actual date of purchase.

**B. Warranty Performance Procedure:** Notice of the claimed defect must be made in writing or by telephone to the Manufacturer as follows: Customer Service Department, Smiths Medical ASD, Inc., 160 Weymouth Street, Rockland, MA 02370, (800) 258-5361. Notice to the Manufacturer must include date of purchase, model and serial number, and a description of the claimed defect in sufficient detail to allow the Manufacturer to determine and facilitate any repairs which may be necessary. **AUTHORIZATION MUST BE OBTAINED PRIOR TO RETURNING THE TEMP CHECK.** If authorized, the TEMP CHECK must be properly and carefully packaged and returned to the Manufacturer, postage prepaid. Any loss or damage during shipment is at the risk of the sender.

**C. Conditions of Warranty:** The warranty is void if the TEMP CHECK has been 1) repaired by someone other than the Manufacturer or its authorized agent; 2) altered so that its stability or reliability is affected; 3) misused; or 4) damaged by negligence or accident. Misuse includes, but is not limited to, use not in compliance with the Operator's Manual or use with non-approved accessories. Removal or damage to the TEMP CHECK's serial number will invalidate this warranty.

**D. Limitations and Exclusions:** Repair or replacement of the TEMP CHECK or any component part thereof is the **EXCLUSIVE** remedy offered by the Manufacturer. The following exclusions and limitations shall apply:

1. No agent, representative, or employee of the Manufacturer has authority to bind the Manufacturer to any representation or warranty, expressed or implied.
2. **THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS OR USE OF THE TEMP CHECK FOR ANY PARTICULAR PURPOSE.**
3. The TEMP CHECK can only be used under the supervision of medical personnel whose skill and judgment determine the suitability of the TEMP CHECK for any particular medical treatment.
4. All recommendations, information, and descriptive literature supplied by the Manufacturer or its agents are believed to be accurate and reliable, but do not constitute warranties.

The Manufacturer disclaims responsibility for the suitability of the TEMP CHECK for any particular medical treatment or for any medical complications resulting from the use of the TEMP CHECK. The Manufacturer shall not be responsible for any incidental damages or consequential damages to property, loss of profits, or loss of use caused by any defect or malfunction of the TEMP CHECK.

This warranty gives the Original Purchaser specific legal rights, and the Original Purchaser may have other legal rights which may vary from state to state.

## **Serial Number Label**

Units returned for warranty service must have Serial Numbers intact. Those with missing or altered Serial Numbers will be serviced as Non-Warranty repairs.

## **Prompt Disposition**

Smiths Medical will make a good faith effort for prompt correction or other adjustment with respect to any product that proves to be defective within warranty. For products requiring service, see the Service section of this manual.

## **Service**

All service must be performed by Smiths Medical or an authorized service representative. Service by any other person or organization voids the warranty and transfers liability for malfunctions of the device to the servicing organization.

## **Warranty Service**

Devices received for repair that have not been obviously abused or impact damaged and are still under warranty will be promptly repaired and returned at no charge. See the limited warranty section of this manual. A no-charge purchase order is requested for tracking.

## **Non-Warranty Work**

Devices received that have suffered obvious abuse or impact damage and devices no longer under warranty will be promptly inspected and a verbal estimate of repair cost will be provided. A purchase order will be required from the hospital consistent with the verbal estimate. A written estimate will be provided upon request.

## **Calibration Service**

Smiths Medical, provides a calibration service for the TEMP CHECK. It is recommended that the TEMP CHECK be returned to Smiths Medical or an authorized service representative every twelve months for calibration.

Contact the Smiths Medical Technical Service Department or an authorized service representative before shipping any equipment for calibration or repair to obtain a Return Material Authorization (RMA) and pricing information. Please have the equipment Serial Number and a description of the problem or service required.

## **Service Contacts**

Contact your Smiths Medical Technical Service Department or Smiths Medical distributor at:

### **USA/Canada**

Smiths Medical ASD, Inc.  
Anesthesia and Safety Devices Division  
160 Weymouth Street  
Rockland, MA 02370 USA

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Fax +61 (0) 7 3340 1399  
New Zealand Tel 0 800 444 200

[www.smiths-medical.com](http://www.smiths-medical.com)

## **Disposal Information**

The TEMP CHECK contains lead that is used in solder of electric assembly. When you are ready to dispose of the device, observe federal, state, and local codes or requirements for disposal of hazardous materials and for recycling of solid waste materials that may impact the environment.



# Specifications

## Physical Specification

Height	12.70 cm (5.0 inch)
Length	5.59 cm (2.2 inch)
Width	11.94 cm (4.7 inch)
Weight	0.45 kg (1 Lb.)
Shipping Weight	1.8 kg (4 Lbs.)




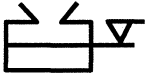
## Electrical Specifications





Input Voltage	115V-230V~
Operating Frequency	50-60 Hz
Operating Current	4.3mA @ 115V~ / 2.15mA @ 230V~
Power Source	H-1200 Fluid Warmer Auxiliary Outlet

## Operating Specifications

H-1200 Fluid Warmer Recirculating	
Solution Source Temp	41.7 ±0.2 °C
Ambient Temperature	20 °C–24 °C

# Symbols

Symbols	Definitions
	ON - Only for a part of the equipment. The Mains are connected
	OFF - Only for a part of the equipment. The Mains are connected
	Reservoir Temperature Display
	Add Recirculating Solution

Symbols	Definitions
	Check Disposables
	Over Temperature
	Recirculating Solution Temperature
	Automatic Operation
	Over Temperature Test (Recirculating Solution Over Temperature)
	Alarm Test
<b>IPX1</b>	Protected Against Dripping Water
	Attention, see instructions for use
	Maximum Reservoir Level
	Minimum Reservoir Level
	Collect separately for electrical and electronic equipment.
	CE Mark
	Date of Manufacture



Symbols	Definitions
<b>REF</b>	Catalog Number
<b>SN</b>	Serial Number
<b>PN</b>	Part Number